

REMARKS

After entry of the foregoing amendment Claims 1-38 will be pending. The Final Action dated July 11, 2006, in this Application has been carefully considered. Claims 1, 17, 18 and 24 have been amended. Claim 38 is added by this amendment. Support for this Amendment can be found, among other places, at page 7, lines 9-10 and in Figure 1 of the original Application. The above amendments and the following remarks are presented in a sincere attempt to place this Application in condition for allowance. Continued examination and allowance are respectfully requested in light of following remarks for those Claims not in condition for allowance.

Claims 1-2, 6, 17-18, 24-26 and 30 stand rejected under 35 U.S.C. § 102(e) in view of U.S. Patent 6,529,093 to Ma ("Ma"). Insofar as it may be applied against these Claims as amended, these rejections are respectfully traversed.

Rejected independent Claim 1 particularly recites one of the distinguishing characteristics of the present invention, namely, "an apparatus, wherein the apparatus is a temperature-independent microscopic switch, comprising a substrate, wherein the substrate is at least configured to support the switch, a conductive beam, wherein the conductive beam is at least configured to be suspended from an anchor with one free end" and "at least one tether, wherein the at least one tether is at least configured to be attached to a fixed location and attached to the conductive beam away from the anchor." (New language underlined).

Regarding Claim 1, Ma was cited as assertedly fully disclosing the following: (1) a microscopic switch comprising: (2) a substrate [515], wherein the substrate is at least configured to support the switch; (3) a conductive beam [503], wherein the conductive beam is at least configured to be suspended with one free end; (4) means for engaging [507], wherein the means for engaging at least engages the conductive beam to allow signal transmission [505]; and (5) at least one tether

[513], wherein at the least one tether is at least configured to be attached to the substrate and attached to the conductive beam [Figure 5].

The Examiner further stated in the “Response to Arguments” that the features upon which Applicant relies (i.e., the tether prevents the distal end of the conductive beam from moving in an upward direction without preventing movement of the conductive beam in other directions and that the mechanical post in Applicant’s invention equivalent to the element relied upon by the Examiner in Ma and/or Nelson as an “anchor/tether” are not recited in the rejected claim(s) (Final Action, page 2). However, the Applicant respectfully submits that independent Claim 1 now expressly recites “an anchor” and expressly recites a “tether” that is “away from the anchor.” As amended, Claim 1 clearly distinguishes from Ma and/or Nelson

In the Final Action, the Examiner subsequently cites reference number 513 as a tether. However, Ma expressly refers to 513 as an anchor. Further, Ma does not suggest, teach, or disclose a tether, particularly not “away from the anchor.” Specifically, Ma suggests, teaches, or discloses in pertinent part that:

- (1) the cantilever beam has one end secured to an anchor 109 that is in turn anchored to a substrate 11 (emphasis added, column 2, lines 33-34)
- (2) One end of the cantilever beam 207 is connected to an anchor 209 that is fixed to a substrate 211 (emphasis added, column 2, lines 49-50);
- (3) the cantilever beam 503 has one end (the proximal end) secured to an anchor 513;

- (4) the anchor in turn is secured to a substrate 515 (emphasis added, column 3, lines 24-26);
- (5) the anchor [607 and 609] in turn is secured to a substrate (emphasis added, column 4, line 44);
- (6) the cantilever beam 703 has one end (the proximal end) secured to anchor 707 (emphasis added, column 5, lines 17-19); and
- (7) the anchor [805 and 807] in turn is secured to a substrate (emphasis added, column 5, line 63).

Thus, Ma discloses anchors that fix and secure the cantilever beam and no tether. In contrast, Claim 1 recites an anchor and a tether “away from the anchor.” Where an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. *Toro Co. v. White Consolidated Industries, Inc.*, 199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999). As disclosed in the Specification of the present Application, the tethered cantilevered arm 100 attaches highly compliant (low spring constant) tethers 107 to the free end of the cantilever approximately perpendicular to the main cantilever beam. The tethers are sized to hold down a beam with a vertical stress gradient at a fixed gap but yet be sufficiently compliant to absorb any CTE mismatch by flexing sideways (page 6, lines 10-16). Thus, as defined, a tether is compliant. In contrast, an anchor that fixes and secures a cantilever beams, as in Ma, is not compliant. Accordingly, the anchor described by Ma is not a tether as recited by independent Claim 1, nor is any tether “away from the anchor” disclosed or suggested.

In view of the foregoing, it is apparent that the cited reference does not disclose, teach, or suggest the unique combination recited in Claim 1. Applicant therefore submits that Claim 1 is

clearly and precisely distinguishable over the cited reference in a patentable sense, and is therefore allowable over this reference and the remaining references of record. Accordingly, Applicant respectfully requests that the rejection of Claim 1 under 35 U.S.C. § 102(e) be withdrawn and that Claim 1 be allowed.

Claims 2 and 6 depend upon and further limit Claim 1. Hence, for at least the aforementioned reasons, these Claims should be deemed to be in condition for allowance. Applicant respectfully requests that the rejections of dependent Claims 2 and 6 also be withdrawn.

Applicant contends that the rejections of Claim 18, 24-26, and 30 are overcome for at least some of the reasons that the rejection of Claim 1 is overcome. These reasons include Ma not disclosing, teaching or suggesting a “tether.” (Emphasis added.) Applicant therefore respectfully submits that Claims 18, 24-26, and 30 are clearly and precisely distinguishable over the cited references in any combination.

Regarding Claim 17, the Claim particularly recites one of the distinguishable characteristics of the present invention, namely, “a method of operation of a temperature-independent microscopic switch, comprising engaging the switch, signal transmission through the switch once engaged, disengaging the switch once signal is transmitted, preventing of warping of a flexible beam that is configured to at least operate as a throw arm once the temperature-independent microscopic switch is engaged by restraining upward warping movement of the flexible beam from a nonengaged position while permitting downward movement of the flexible beam to a sufficient degree to allow engaging the switch.” (Emphasis added.)

With respect to Claim 17, Ma was cited as assertedly fully disclosing that the method steps of operating the microscopic switch are inherent in the product structure as previously described for Claims 1 and 2 (Final Action, page 3). However, the structure in Ma does not “prevent[] warping of

a flexible beam . . . by restraining upward warping movement of the flexible beam from a nonengaged position while permitting downward movement of the flexible beam to a sufficient degree to allow engaging the switch.” Thus, the Applicant respectfully submits that a prima facie case of anticipation, whether inherent or not, has not been set forth.

Moreover, Ma does not suggest, teach, or disclose preventing the warping of a flexible beam. Specifically, Ma suggests, teaches, or discloses that the distal end of the cantilever beam 503 is left unsupported and is free to move. However, in its undisturbed state, the cantilever beam 503 is substantially straight and suspended over the substrate 515 (column 3, lines 47-50). Furthermore, as illustrated by Figure 5 of Ma, the distal end of the cantilever beam is also free to move upwardly. Accordingly, Ma describes leaving a cantilever beam free to move and, hence, warp. In contrast, Claim 17 recites “preventing of warping of a flexible beam . . . by restraining upward warping movement of the flexible beam from a nonengaged position while permitting downward movement of the flexible beam to a sufficient degree to allow engaging the switch.” Clearly, Ma neither teaches nor suggests any structure capable of accomplishing this.

In view of the foregoing, it is apparent that the cited reference does not disclose, teach or suggest the unique combination now recited in amended Claim 17. Applicant therefore submits that Claim 17 is clearly and precisely distinguishable over the cited reference in a patentable sense, and is therefore allowable over this reference and the remaining references of record. Accordingly, Applicant respectfully requests that the rejection of Claim 17 under 35 U.S.C. § 102(e) be withdrawn and that Claim 17 be allowed.

Claim 18 depends on and further limits Claim 17. Hence, for these additional aforementioned reasons, this Claim should be deemed to be in condition for allowance. Applicant respectfully requests that the rejection of the dependent Claim 18 also be withdrawn.

Claims 1-3 and 25-27 stand rejected under 35 U.S.C. § 102(e) by U.S. Patent No. 6,529,093 to Nelson (“Nelson”). Insofar as it may be applied against the Claims, these rejections are respectfully traversed. As set forth above, rejected independent Claim 1 particularly recites one of the distinguishing characteristics of the present invention, namely, a “tether.”

Regarding Claim 1, Nelson was cited as assertedly fully disclosing: (1) a microscopic switch comprising: (2) a substrate [22], wherein the substrate is at least configured to support the switch; (3) a conductive beam [32], wherein the conductive beam is at least configured to be suspended with one free end; (4) means for engaging [24, 26, and 28], wherein the means for engaging at least engages the conductive beam to allow signal transmission [signal line 28]; and (5) at least one tether [support section above 34], wherein the at least one tether is at least configured to be attached to the substrate and attached to the conductive beam.

However, like Ma, Nelson does not suggest, teach, or disclose both an anchor and a tether “away from the anchor.” Specifically, Nelson suggests, teaches, or discloses that a cantilever 32 may be supported by support structure 34 (column 8, line 53). Again, neither an anchor nor a support structure (e.g., an anchor) is a tether as recited by Claim 1. Thus, the reference fails to disclose each and every element of Claim 1, namely a tether.

In view of the foregoing, it is apparent that the cited reference does not disclose, teach or suggest the unique combination now recited in amended Claim 1. Applicant therefore submits that Claim 1 is clearly and precisely distinguishable over the cited reference in a patentable sense, and is therefore allowable over this reference and the remaining references of record. Accordingly, Applicant respectfully requests that the rejection of Claim 1 under 35 U.S.C. § 102(e) be withdrawn and that Claim 1 be allowed.

Claims 2-3 depend on and further limit Claim 1. Hence, for at least the aforementioned reasons, these Claims should be deemed to be in condition for allowance. Applicant respectfully requests that the rejections of the dependent Claims 2-3 also be withdrawn.

Independent Claim 24 has also been rejected under 35 U.S.C. § 102(e) over Ma and/or Nelson, for reasons similar to the reasons expressed by the Examiner as to Claim 1. However, Claim 24 has been amended to recite: “A cantilever MEMS switch comprising a cantilever arm having a portion attached to a and a movable portion and further comprising a tether having at least two ends, wherein a first end of the tether is at least coupled to a fixed location, and wherein, a second end of the tether is at least coupled to the movable portion of a cantilever arm.” (New language underlined.) Accordingly, Claim 24 now clarifies that the cantilever arm has “a portion attached to a fixed location and a movable portion” and that the tether is coupled to the “movable portion.” Because each of Ma and Nelson “only disclose a cantilever having a nonmovable end attached to a substrate, but no tether “attached a movable portion” of the cantilever, neither Ma nor Nelson anticipates the invention defined in Claim 24. Accordingly, Claim 24 is also allowable.

Claims 25-30 depend on and further limit independent Claim 24 which the Applicant contends is allowable as set forth above. Hence, for at least the aforementioned reasons, Claims 25-30 should be deemed to be in condition for allowance as being dependent on an allowable base Claim. Applicant respectfully requests that the rejections of the dependent Claims 25-30 also be withdrawn.

Claims 4-5 and 28-29 stand rejected under 35 U.S.C. § 103(a) by Ma in view of U.S. Patent No. 6,876,482 to DeReus (“DeReus”). Insofar as they may be applied against the Claims, these rejections are traversed.

Claims 4-5 depend on and further limit independent Claim 1 which the Applicant contends is allowable as set forth above. Hence, for at least the aforementioned reasons, Claims 4-5 should be deemed to be in condition for allowance as being dependent on an allowable base Claim. Applicant respectfully requests that the rejections of the dependent Claims 4-5 also be withdrawn.

Further, and with regard to Claims 4 and 28 (and 5 and 29), Ma was cited as assertedly fully disclosing the claimed invention except that the insulation comprises Silicon Dioxide (Silicon Nitride). DeReus was cited as assertedly fully disclosing that Silicon Oxide is a dielectric material. The Examiner further stated that it would have been obvious to combine the teachings of Ma and DeReus since it appears that the invention would perform equally well with any dielectric material.

As set forth previously, Ma does not suggest, teach, or disclose a tether. Likewise, DeReus does not suggest, teach, or disclose a tether. Specifically, DeReus is apparently directed toward to the design and fabrication of a MEMS device having contact and standoff bumps and related methods. Otherwise, DeReus does not appear to suggest, teach, or disclose a tether. Nor did the Examiner cite DeReus as disclosing a tether. Since neither Ma nor DeReus appear to disclose tethers, the Applicants submit that the proposed combination omits at least one element of the claimed invention.

In view of the foregoing, it is apparent that the cited references do not disclose, teach, or suggest the unique combination now recited in amended Claims 4-5 and 28-29. Applicant therefore submits that Claims 4-5 and 28-29 are clearly and precisely distinguishable over the cited references of record. Accordingly, Applicant respectfully requests that the rejection of Claims 4-5 and 28-29 under 35 U.S.C. § 103(a) be withdrawn and that Claims 4-5 and 28-29 be allowed.

With regard now to new Claim 38, Applicant respectfully submits that none of Ma, Nelson or DeReus alone, or in combination suggests, teaches, or discloses a microscopic switch comprising

a tether attached to the conductive beam and a mechanical post coupled to a proximal end of the conductive beam. As set forth above, Ma describes anchors that fix and secure a cantilever beam. However, as set forth previously, Ma fails to disclose a tether “away from the anchor.” Similarly, Nelson describes a support structure while also failing to describe a tether. Additionally, DeReus was neither cited for, nor appears to disclose, a tether.

Thus, the cited references fail to disclose a microscopic switch that comprises both an anchor and a tether. Accordingly, Applicant submits that new Claim 38 is clearly and precisely distinguishable over the cited references in a patentable sense, and is therefore allowable over these references and the remaining references of record.

Applicant has now made an earnest attempt to place this Application in condition for allowance. For the foregoing reasons and for other reasons clearly apparent, Applicant respectfully requests full allowance of Claims 1-38.

Applicant hereby requests continued examination and an extension of time of three months for the making of this Response. Applicant hereby authorizes the Examiner to charge the required fees to Deposit Account No. 50-0605 of CARR LLP. Applicant does not believe that any other fees are due; however, in the event that any other fees are due, the Commissioner is hereby authorized to charge any required fees due (other than issues fees), and to credit any overpayment made, in connection with the filing of this paper to Deposit Account No. 50-0605 of CARR LLP.

Should the Examiner deem that any further amendment is desirable to place this Application in condition for allowance, the Examiner is invited to telephone the undersigned at the number listed below.

Respectfully submitted,

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